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## Intensive Behavioral Intervention for school-aged children with autism: Una Breccia nel Muro (UBM)—A Comprehensive Behavioral Model

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### ABSTRACT

Although, reviews and outcome research supports empirical evidence for Early Intensive Behavior Intervention in pre-schoolers, intensive behavioral service provision for school-aged children with autism spectrum disorders (ASD) are less subject to research studies. In order to provide effective behavioral interventions for school-aged children it was first necessary to comprehend key variables that are common to empirically validated programs and to tailor them to the needs of older children and their families in community settings. The proposed Comprehensive Behavioral Model "Una Breccia nel Muro" (UBM) includes individualized assessment and skill building, treatment provision in inclusive setting and cross-service collaboration, parent inclusion and support, and intensive training for parents, staff as well as school teachers.

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### 1. Introduction

Autism is a neuro-developmental disability that is the core disorder of the pervasive developmental disorders (PDDs; APA, 2000). Autism, however, is a dimension (autism spectrum disorders, ASD) rather than a distinct category, characterized by varying degrees of pervasive deficits in social communicative behaviors, including pragmatic language usage, impairments in social reciprocity, and the tendency toward behavioral rigidity. Children with ASD lack understanding of how to initiate and respond to joint attention with other persons, have difficulties in social timing of communication, and may not understand other people's intentions expressed by language and gestures, demonstrating difficulty with organizing appropriate responses, and with inhibition of repetitive behaviors and interests. Children with core autism have more profound difficulties, and are more likely to have associated speech and mental retardation, than those with other diagnoses within the PDDs (Volkmar, Lord, Bailey, Schultz, & Klin, 2004).

There is a growing body of empirical evidence of treatment for both the deficit features of autism (e.g., cognitive, language and social) and the expressed behavioral features of deficit areas of the autism continuum (e.g., repetitive behaviors, problem behaviors) (Lord et al., 2005; Makrygianni & Reed, 2010; Matson & Smith, 2008; Rogers & Vismara, 2008; Spreckley & Boyd, 2009; Zachor, Ben-Itzhak, Rabinovich, & Lahat, 2007). Key features of an empirical approach to behavioral interventions have been defined as: (1) operational definition of observable target behaviors, (2) definition of behavioral antecedents and

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consequents that make explicit the functional relationship between the treatment environment and the target behavior, (3) a task analysis that explicitly defines the treatment procedures, and (4) a measurement system for quantifying the acquisition, maintenance and generalization of the target behavior (Rogers, 2000). Several models and treatment principles of behavioral treatment for autism have been established such as Applied Behavior Analysis (ABA), Treatment and Education of Autistic and related Communication-handicapped Children (TEAACH), Pivotal Response Training (PRT), and Incidental Teaching (IT).

## 2. Behavioral interventions in ASD

### 2.1. Skill-focused behavioral interventions

#### 2.1.1. Language and communication interventions

Early communication intervention approaches employed a variety of structured clinic-based or home-based discrete-trial-teaching (DTT) formats (Buffington, Krantz, McClannahan, & Poulson, 1998; Koegel, O'Dell, & Dunlap, 1988; Krantz, Zalewski, Hall, Fenski, & McClannahan, 1981). These studies investigated teaching approaches comprising differential reinforcement, correction procedures with response modeling and prompt-fading procedures. It has been demonstrated that children with ASD successfully acquired verbal language as primary communication means (McEachin, Smith, & Lovaas, 1993), could be taught to include gestures to accompany simple verbal responses (Buffington et al., 1998), and could establish increasingly complex sentence productions and to answer *wh*-questions (Krantz et al., 1981) when treatment was established before age 5–7. Although, the DDT language intervention approach successfully demonstrated generalization carry-over to novel material facilitated by discriminative procedures, such generalization effects did not promote language use beyond training settings (Goldstein, 2002; Volkmar, Cook, & Pomeroy, 1999). These disadvantages have led to applications of instructional strategies in natural environments of home, school, and community settings (Koegel, 2000). Most of the teaching approaches in the natural environment require that the child attempt to communicate. They then facilitate the child's requesting by utilizing motivational procedures, Mand-model and time-delay procedures, providing frequent opportunities for child-initiated expressive language throughout child's daily life, including parents, teachers, peers and therapists (Bibby, Eikeseth, Martin, Mudford, & Reeves, 2001; Koegel, 2000; Volkmar et al., 1999). It has been argued that there are a variety of commonalities in the procedures employed in DDT and NET interventions (Hepting & Goldstein, 1996), including environmental arrangement, waiting, use of natural reinforcers, balanced turn-taking, modeling, contingent imitation, requesting imitation, and time delay. Thus, more effective generalization in NET interventions might be simply due to increased incorporation of a comprehensive curriculum-based target program into everyday activities (Goldstein, 2002).

#### 2.1.2. Social skills interventions

A variety of social intervention approaches have been evaluated in behavioral research (McConnell, 2002; Rogers, 2000; Wang & Spillane, 2009) and shown to be effective in facilitating child–parent/adult social interactions (Bauminger, 2002; Dawson & Galpert, 1990; Stahmer, 1995) and child–peer social interactions (Carter, Cushing, Clark, & Kennedy, 2005; Garrison-Harrell, Kamps, & Kravis, 1997; Koegel, Werner, Vismara, & Koegel, 2005; Scattone, Tingstrom, & Wilczynski, 2006) in both pre-school and school-aged children. Early social intervention studies focused on discrete-trial adult-directed interventions, whereas recent approaches targeted more incidental teaching that utilized naturally occurring social events with peers in everyday setting. Although the few studies that have focused on improving social behaviors in low-functioning children with autism and studies mainly lacked sufficiently large sample sizes, a variety of teaching methods incorporated in social intervention approaches have been demonstrated to improve social skills. Reviews of social intervention studies (McConnell, 2002) classified existing approaches into: (1) ecological variations, (2) collateral skill interventions, (3) child-specific interventions, and (4) peer behaviors (Chan et al., 2009; McConnell, 2002). These reviews identified weak and moderate effects of ecological variations and collateral skill interventions in producing increased social interactions, that were identified as necessary to increase the reinforcing value of social participation but not sufficient to produce social interactions in autistic children (McConnell, 2002; Myles, Simpson, Ormsbee, & Erickson, 1993). Relatively robust treatment effects in increasing skill competencies, frequency and quality of social behaviors have been demonstrated from child-specific intervention (Bauminger, 2007; Belchic & Harris, 1994; Shearer, Kohler, Buchan, & McCullough, 1996) and peer-mediated intervention procedures (Chan et al., 2009; Chung et al., 2007; Harper, Symon, & Frea, 2008). Child-specific interventions typically incorporate instructional procedures to increase social knowledge and social problem solving; high-density reinforcement to prime social responding; social skills training and generalization techniques particularly executive function skills such as self monitoring whereas peer-mediated interventions include peer-mediated incidental teaching as well as structured peer tutoring (McConnell, 2002). Both, child-specific and peer-mediated interventions have been generally effective but demonstrated differential effects, with child-specific interventions facilitating target child initiation rates and peer-mediated interventions generating elements of sustained and high-quality target child responses to initiations.

#### 2.1.3. Repetitive and challenging behaviors interventions

Restricted and repetitive behaviors (RRBs) have often been considered as associated features of the core social and communicative deficits of ASD and as such received far less attention in treatment evaluation studies (Lewis & Kim, 2009). RRBs is a broad core area, that can be clustered into “lower-order” actions (including motor stereotypies, repetitive object

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